1/2   015   UNCLASSIFIED   PROCESSING DATE--30OCT70

TITLE--REFINING OF LINSEED OIL -U-

AUTHOR-(05)-ARTYUNYAN, N.S., ARISHEVA, YE.A., LITVINOVA, YE.D., PETRENKO,
  YU.A., MNUKHIN, U.YU.

CCUNTRY OF INFO--USSR

SOURCE--MASLO-ZHIR. PROM. 1970, 36(3), 19-21

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--WOOD CHEMICAL PRODUCT, CHEMICAL PURIFICATION, OPTIC PROPERTY,
  TEST METHOD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1561   STEP NO--UR/9085/70/036/003/0019/0021

CIRC ACCESSION NO--AP0118544
                            UNCLASSIFIED

CIRC ACCESSION NO--AP0118544
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REFINING OF LINSEED OIL,
CONSISTING OF TREATING WITH ACIDS, NEUTRALIZATION WITH NAOH (80 G-L.),
AND TREATING WITH ACTIVATED BLEACHING CLAY WAS EXPTL. INVESTIGATED WITH
SPECIAL EMPHASIS ON ACID TREATMENT. A COMPARISON WAS MADE BETWEEN
REFINING INCLUDING TREATMENT WITH ACIDS, AND REFINING WITHOUT ACIDS.
PRELIMINARY TREATMENT OF 3 LINSEED OIL TYPES (PREPD. FROM FLAX FOR
SPINNING, FROM FLAX FOR OIL PREPN., AND FROM A FLAX MIXT.) WITH
0.2PERCENT (BASED ON THE AMT. OF OIL) 85PERCENT H_3PO_4 OR
93PERCENT H_2SO_4 OR WITH THEIR DIL. SOLNS. PROVIDES BETTER
ELIMINATION OF PHOSPHATIDES AND AN IMPROVEMENT IN OIL APPEARANCE (LOWER
COLOR) AND ITS THERMAL TESTING COMPARED WITH AN UNTREATED OIL SAMPLE.
    FACILITY: KRASNODAR. POLITEKH. INST., KRASNODAR, USSR.

UNCLASSIFIED

UDC: 621.793.1:669.718

ZEMSKOV, G. V., and ARTYUSHCHENKO, I. I., Odessa Polytechnic Institute

"Deposition of Aluminum From the Gas Phase"

Moscow, Zashchita Metallov, Vol. 6, no. 4, Jul-Aug 70, pp 473-474.

Abstract: Aluminum coatings may be deposited on any material, including nonmetals, capable of withstanding heat up to 300°C by the use of thermal degradation of vapors of organoaluminum compounds at relatively low temperatures. Triisobutylaluminum, a colorless liquid with a boiling temperature of 200°C, was used as the initial organoaluminum compound (OAC). The process is of an adsorption-catalytic type and the increase in OAC vapor concentration in the gas mixture raises the deposition rate to a certain value. At a lower velocity of the gas flow the extent of metal extraction from OAC is greater but the coating is not uniform over the length of the specimen. Apparently, coating uniformity requires a flow of specific turbulence. Optimum results were obtained with a steel substrate temperature within 280--300°C. A coating cannot be produced at 260°C and below. An increase in temperature causes hydrocarbon dissociation; carbon

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which hinders the formation of an aluminum coating is liberated on the surface of the metal. Coating uniformity is promoted by constant temperature along the length of the specimen. Diffusion annealing raises the heat resistance of coatings. Interdiffusion of elements at metal interface provides strong cohesion of the coating with the base. The aluminum coating is nonporous, dense, and plastic. The advantage of the method is a high metal deposition rate, moderate processing temperature, and the possibility of coating a variety of materials. The method may be used to produce coatings at temperatures below the recrystallization point of the metal or the alloy.

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USSR   UDC: 629.735.33.072.8--515

ARTYUSHENKO, M. V. and KOVAL'CHUK, O. I.

"Storage and Transmission of Sequences of Moving Images"

Abstract: A method is proposed for storing and producing information regarding changes in the shape of objects with less redundancy than television or cinematic frames. The method makes use of the theory of continuous groups for the practically important problem of compressing preserved and perceived information in a form similar to the succession of images shown in aviation training devices. To attain this end, the authors examine the physics of the connection between the images. A description of the set of homeomorphic images is obtained through a single specified element of that set and the set of transformation functions of the image plane, and it is shown that the description can be further simplified through a more detailed examination of the set of transformation functions. Expressions are found for the homeomorphism between transformation groups. The expressions obtained for shortening the amount of

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UDC: 629.735.33.072.8--515

ARTYUSHENKO, M. V., et al, Izvestiya VUZ SSSR--Radioelektronika, No 9, 1972, pp 1160-1165

stored images were subjected to modeling on the BESM-6 computer, and the block diagram for the modeling procedure is shown.

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USSR UDC: 577.4

ARTYUSHENKO, V. V., TURUTA, Ye. N.

"Analysis of the Reliability of Microprogram Automata"

V sb. Avtomaty i upr. setyami svyazi (Automata and Control of Communications Networks--collection of works), Moscow, "Nauka", 1971, pp. 154-159 (from RZh-Kibernetika, No 4, Apr 72, Abstract No 4V386)

Translation: The paper proposes a reliability criterion for a microprogram automaton and a method of calculating reliability by this criterion. Authors' abstract.

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USSR

UDC: 77

ARTYUSHIN, L. F.

"Principles of Reproduction of Color in Photography, Cinematography, and Polygraphy"

Osnovy Vosproizvedeniya Tsveta v Fotografii, Kino i Poligrafii [English Version Above], Moscow, Iskusstvo Press, 1970, 548 pp, (Translated from Referativnyy Zhurnal Fizika, No. 8, 1970, Abstract #8D1319K, by A. L. Kartuzhanskiy).

Translation: This book is a monograph on the theoretical principles of color reproduction (CR) and methods of color correction (CC) in photographic and polygraphic images (including electronic methods of CC). It consists of 19 chapters: 1) Basic concepts and definitions of color science; 2) The duplication theory of CR; 3) Light-dividing characteristics of photographic materials; 4) External masking; 6) Elements of colorimetry; 7 and 8) The spectral sensitivity of sensors in additive and subtractive processes; 9) The selection of dyes for subtractive synthesis; 10) Electronic methods of CC; 11) Electronic light-dividing correction; 12) The black image in color reproduction; 13 and 14) Gradation correction, including

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USSR   UDC: 624.072.2

ARTYUSHKOVA I. F.

"Optimization of a Guying System in the Case of Nonunique Loading"

Translation: The author considers optimization of a flat guying system,
taking the theoretical cost of the guys and support ring as the target
function. Forces in the prestressing stage are taken as the independent
variables. Conditions of equilibrium, and limitations on strength and
rigidity are taken into account. A method of descent is considered in which
use is made of the linear parts of increments in the parameters being
varied and linearization of the cost function. The simplex method is used
for solving an auxiliary problem at each step. Problems of convergence
are not considered. The results of an example of calculation on the
"Ural-4" digital computer are presented. A. I. Vinogradov.

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USSR

ARUIN, L. I.

"Concerning the Faces of a Convex Linear Shell of a Set of Integral Points Belonging to the Set of Admissible Solutions of a Problem in Whole-Number Linear Programming"

Translation: It is shown that solving problems in whole-number linear programming by the method of truncation involves overcoming a number of difficulties -- both theoretical and computational. Let L be a set of plans of a problem in linear programming. Let L^W be the set of plans of the corresponding whole-number linear programming problem. Let $V(L^W)$ be a convex linear shell of set L^W. Clearly by solving the linear programming problem with a set of restrictions given by the faces of $V(L^W)$ we get the optimum plan of the corresponding whole-number linear programming problem. It is also clear that the faces of $V(L^V)$ constitute the "strongest" truncations. In the final analysis, the problem of finding the faces of $V(L^W)$ is of in-

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ARUIN, L. I., <u>Tr. 4-y Zimn. shkoly po mat. programmir. i smezh. vopr., 1971, vyp. 1</u>, Moscow, 1971, pp 137-148

terest both in itself and from the standpoint of its possible application. Important results in this direction were obtained by Gomori (RZh-Mat, 1970, 6V512; literature is cited there as well). However, even after the appearance of this paper, methods of finding the faces of $V(L^W)$ remain unknown.

This paper investigates certain problems relating to the structure of the faces of $V(L^W)$. The results presented here were found in a dissertation ("Investigation of the Structure of Auxiliary Linear Constraints in Various Algorithms of the Method of Truncation", Moscow, mckh.-mat. MGU, 1970). Some results of a paper by this abstractor (abst. 6V428) are used.

Using the approach utilized by Gomori for constructing truncations in his third algorithm, the author studies the case where set L takes the following form:

$$-\alpha x_1 + x_2 \leqslant 0; \quad -x_1 - x_2 \leqslant -1; \quad x_1, x_2 \geqslant 0. \tag{1}$$

Here α is positive.

Theorem. From the equation

$$\left[-\frac{\alpha a + b}{\lambda}\right] x_1 + \left[\frac{a - b}{\lambda}\right] x_2 = \left[-\frac{b}{\lambda}\right]. \tag{2}$$

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ARUIN, L. I., Tr. 4-y Zimn. shkoly po mat. programmir. i smezh. vopr., 1971, vyp. 1, Moscow, 1971, pp 137-148

where [A] designates the integral part of number A, it is possible to find all faces of $V(L^w)$ for L given by (1) for the corresponding positive λ and non-negative a and b. An example is constructed of a problem with two variables in which an analogous method does not give all faces of $V(L^w)$. It is shown that the number of faces may be arbitrarily large even for the simplest region L. Yu. Finkel'shteyn.

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1/2   021   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--SOME PROBLEMS CONCERNED WITH THE PATHOGENESIS OF ACUTE PANCREATITIS
  -U-
AUTHOR-(03)-ARUIN, L.I., VAYNSHTEYN, T.YA., ZHUK, YE.A.

COUNTRY OF INFO--USSR

SOURCE---BYULLETEN EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69, NR
  5, PP 42-46
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PANCREATITIS, EDEMA, HEMORRHAGE, TRYPSIN, CLINICAL MEDICINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0067   STEP NO--UR/0219/70/069/005/0042/0046

CIRC ACCESSION NO--AP0120767
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0120767

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UPON INTRODUCTION INTO THE
  PANCREATIC DUCT OF ALBINO RATS OF 1 ML OF A 0.001 N SOLUTION OF
  HYDROCHLORIC ACID, IRRESPECTIVE OF THE ADDITION OF CRYSTALLIC TRYPSIN
  INTO THE SOLUTION, A MORPHOLOGICAL PICTURE OF EDEMATOOS HEMORRHAGIC
  PANCREATITIS DEVELOPS. ADMINISTRATION INTO THE PANCREATIC DUCT OF
  CRYSTALLIC TRYPSIN, DISOLVED DIRECTLY PRIOR TO INTRODUCTION OF A
  0.85PERCENT SOLUTION OF SODIUM CHLORIDE, DOES NOT LEAD TO THE
  DEVELOPMENT OF ACUTE PANCREATITIS. NOTWITHSTANDING THE VERY MARKED
  MORPHOLOGICAL PICTURE OF EDEMATOUS HEMORRHAGIC PANCREATITIS IN THE RAT
  PANCREATIC HOMOGENATE THERE IS REVEALED NO MEASURABLE ACTIVITY OF
  TRYPSIN AND TOTAL PROTEOLYTIC ACTIVITY. REDUCTION IN THE TRYPSINOGEN
  CONTENT IN THE PANCREATIC HOMOGENATE HAS NOT NOTED. THIS GIVES GROUNDS
  TO STATE THAT IN THE ABOVE MENTIONED MODEL TRYPSIN IS NOT THE PRIMARY
  CAUSE OF ACUTE EDEMATOUS HEMORRHAGIC PANCREATITIS.   FACILITY:
  ALL UNION SCIENTIFIC RESEARCH INSTITUTE OF GASTROENTEROLOGY AND THE
  FIRST MOSCOW SECHENOV MEDICAL INSTITUTE.

UNCLASSIFIED

Acc. Nr: AP0047355   Ref. Code: UR0589

ON PATHOGENESIS OF HEMORRHAGE FROM ESOPHAGEAL AND GASTRIC VEINS IN PORTAL HYPERTENSION

By M. D. Patsiora, L. I. Aruin, L. M. Karpman and A. K. Yeramishantsev

The authors have investigated 123 patients with portal hypertension complicated by esophageal or gastric phlebectasis. In 88 patients there were gastroesophageal hemorrhages in the anamnesis. In 34 patients during surgical procedures on esophageal and gastric veins the biopsy mucosa specimens from the cardiac portion of the stomach and lower esophagus were studied. It is concluded, that a hemodynamic factor — high portal pressure is of primary importance in causing hemorrhage from esophageal or gastric varices. The starting mechanism of bleeding is hypertensive crisis in the portal system. Acid-peptic factor could contribute to hemorrhage, while disturbances in the blood coagulation system could stipulate its massive character and duration, but they do not play a leading part in the occurrence of bleeding.

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REEL/FRAME

19790881

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ARUIN, M. I.

FIRST ALL-RUSSIAN CONGRESS ON THE CONTROL OF HEAVY DRINKING

[Article by Kh. I. Idel'chik, candidate of medical sciences, M. I. Aruin, and
A. L. Maziritskiy, candidate of medical sciences, All-Union Scientific Research
Institute of Social Hygiene and Public Health Organization imeni N.A. Semashko,
Moscow; Moscow, Sovetskoye Zdravookhraneniye, Russian, No 2, 1972, submitted
29 July 1971, pp 61-65]

The urgency of the problem of controlling alcoholism makes it imperative
to study not only its state today but also to pursue an indepth historical
analysis. Until now there had not been an exhaustive and generalizing
study dealing with the history of excessive drinking and control thereof in
prerevolutionary Russia and the Soviet Union. In the department of history of
medicine of the All-Union Scientific Research Institute imeni N.A. Semashko,
work is being done in order to fill the gap in this area. The present article
is one of the parts of that investigation.

The culminating element in the history of studying alcoholism in
prerevolutionary Russia was the First All-Russian Congress on the Control of
Heavy Drinking, which convened in Petersburg from 28 December 1909 to 6 January
1910. This congress was an extremely interesting event in Russian public
life. In its work were reflected several of the socioeconomic phenomena
typical of Russia in the early 1900s. An effort was made there to consider
the problem of alcoholism in all its diversity from medical-health, socio-
economic, political, legal, and moral-ethical positions. The congress parti-
cipants inevitably encountered a wide circle of social hygienic problems.
The program of the congress was extremely broad. More than 150 papers were
delivered and discussed at plenary sessions and three sections ("Alcohol and
the Human Organism," "Alcohol and Society," and "Means of Controlling Alcoho-
lism").

The Russian community was drawn more and more to the problem of
controlling heavy drinking since the late 19th century. As it became more and
more widespread, alcoholism became an extremely acute socioeconomic problem.
In spite of the fact that the government hypocritically covered up the
monopoly on sale of alcoholic beverages initiated in 1894 by aspiring to
reduce heavy drinking, the share of revenue in the state budget from the
sale of alcoholic beverages grew consistently. The income from liquor
sales grew from 24.9 percent in 1894 to 30 percent in 1909 [1].

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USSR

LUR'YE, A. A., NAUMOV, R. L., and ARUMOVA, YE. A., Institute of Medical
Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy, USSR Ministry
of Health, Moscow

"Radioactive Tracing of Ixodes persulcatus Ticks"

Abstract: Two radiotracer methods were used for the longterm study of ticks
(for periods up to five years), since the lifespan of the encephalitis-carrying
tick is considered to be 3-5 years. The first method was difficult since it
did not produce a sufficiently high radioactivity in the labeled larvae. The
method involves subcuticular inoculation of 12 females with a 25 microcurie
dose of labeled glucose saline solution. Larvae from these females numbered
1,500-2,300 within 16-20 days with a radioactivity of 0.2-2.2 pulses/sec and
0.8-7.2 pulses.sec per crushed larva. After one month, larvae became ticks.
The maximum activity of larvae and ticks was measured and found to vary --
depending on the number of days between treatment and egg-laying. Larval
activity ranged from 4 to 20 impulses/second, rarely from 30 to 60 impulses/
second. The other radiotracer method used allows one to obtain labeled larvae
and ticks by letting them feed on laboratory animals previouslt treated with

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radioactive substances. White mice were used as radioactive blood donors, since they have a relatively high resistance to radioactivity in comparison with other animals. Labeled glycine was intraperitoneally administered to white mice. Ten mice were used to feed 4,000 ticks and close to 300 nymphs. Most of the radioactive ticks and nymphs were used in field experiments; 150 ticks and 30 nymphs were kept in the laboratory. It was found that the activity of live engorged larvae was 0.5 to 1.1 pulses/sec and that of crushed ones was 4 to 10 pulses/sec. The activity of nymphs was considerably higher. The second radiotracer method is recommended because a label of sufficiently high radioactivity could be obtained and maintained for a longer time period. The development phases of ticks can thus be easily followed by the second method.

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UDC 621.315.592:546.28

USSR

ARUSHANOV, A. Ya., GRIDNEVA, G. N., and YUMATOV, K. A.

"Autoepitaxia of Silicon During Vaporization by Electron Beam in Ultrahigh Vacuum"

V sb. Protsessy rosta kristallov i plenok poluprovodn. (Procedures for the Growth of Semiconductor Crystals and Films -- Collection of Works), Novo-sibirsk, 1970, pp 238-245 (from RZh-Elektronika i yeye primeneniye, No 7, July 1971, Abstract No 7B100)

Translation: Autoepitaxial layers of Si are obtained by the deposition method in a vacuum of 10^{-5}--$5 \cdot 10^{-9}$ mm of mercury. In order to assure high deposition rates, vaporization of the Si is conducted with the aid of a sharp-focused electron beam. The substrates are placed at 50--60 mm from the molten Si on a massive Mo disk which is heated by an electron gun. As substrates n-type Si wafers are used of (111) orientation, 25 mm in diameter and 0.3 mm thick with a resistivity of 80--100 ohm.cm, which are subjected beforehand to mechanical polishing with subsequent degreasing, or are chemically polished. Immediately preceding deposition, the substrates are briefly heated at increased temperatures. The process of deposition is conducted at a temperature of the substrate of 1100--1300° C and a deposition rate of 0.01--2.5 micrometer/min. The thickness of the film is 3--60 micrometer. It is shown that the density of packing defects depends to a considerable degree on the deposition rate, the vacuum in the working chamber, and the substrate temperature. The assumption is confirmed converning an extension of the deposition rate during which perfect layers

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ARUSHANOV, A. Ye., et al., Protsessy rosta kristallov i plenok poluprovodn. (Procedures for the Growth of Semiconductor Crystals and Films — Collection of Works), Novosibirsk, 1970, pp 238-245 (from RZh-Elektronika i yeye primeneniye, No 7, July 1971, Abstract No 7B100)

are obtained, with an improvement of the vacuum. It is found that conditions of growth determine the properties of the Si film. In a vacuum of 10^{-8}--10^{-9} mm of mercury, layers practically without defects are obtained of n- and p-type Si. The resistivity of p-type film is 200--300 ohm.cm. On the basis of the monocrystalline layers obtained, laboratory specimens were prepared of p-n junctions of the type "film-film" with reverse voltage on the order of 500 v. 8 ref. V.G.

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AZIMOV, S. A., ARUSHANOV, G. G., and PIRMATOV, I. I.

"Stationary Values of the Differential Cross Section and Overlap Functions for High Energies"

Abstract: The extremal values obtained earlier (G. G. Arushanov, ZhETF, No 51, 1402, 1966; S. A. Azimov, et al., Izv. vuzov SSSR, Fizika, No 4, 103, 1970) for the differential cross section of elastic scattering in the diffraction cone region are generalized to the case of other angles. They are reduced to a form convenient for a comparison with experimental values which shows that all the external values are close to the experimental value. Similar results were also obtained in the case of binary inelastic reactions and overlap functions. When deriving the sample values for the overlap functions, one should preferably begin with the ordinary expansion in Legendre polynomials and not the integral representation, since the condition of unitarity in this representation, generally speaking, has a complicayed form. In the case of small transmitted pulses in which the formulas can be obtained comparatively easily in both representations, they are comparable.

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USSR

AZIMOV, V. A. and ARUSHANOV, G. G.

"Solving the Unitarity Condition for the Amplitude of the Two-Particle Process"

Abstract: A solution is given for the unitarity condition of the amplitude for the two-particle inelastic process $1 + 2 \rightarrow 3 + 4$ by specifying the sum of the contributions of all possible inelastic reaction channels differing from this process and the amplitudes of the elastic scattering of

$$1 + 2 \rightarrow 1 + 2$$
$$3 + 4 \rightarrow 3 + 4,$$

if the unitarity condition for the collision operator is $SS^+ = 1$. A system of two algebraic equations is obtained. Their exact solution, expressing the coefficient of partial decay of the inelastic two-particle reaction given by the first process above, is determined. A formula obtained for the angular distribution in such reactions is compared with the experimental data with good results.

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AZIMOV, S. A., ARUSHANOV, G. G.

"Van Hove Overlapping Function and Elastic Dispersion at High Energy Levels"

Abstract: The van Hove overlapping function $G(t)$ is defined as describing the contribution of nonelastic processes to the imaginary part of the elastic dispersion amplitude. By using a model of uncorrelated jets, van Hove found that function to be of the exponential form $G(t) = \sigma_{in}e^{\alpha t}$. The purpose of this article is to investigate and clarify the validity of this form of the function in view of the fact that the model on which it is based does not result in quantitative agreement with experiments. To do this, the authors proceed in reverse: i.e., they find the form of the function from the unitary condition by substituting into the latter the experimentally established value for the difraction peak, as was done in an earlier article by the same authors (Izvestiya VUZ SSSR, Fizika, No. 5, 1971, p 85). In the present article, a detailed investigation is made of the elastic

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USSR

AZIMOV, S. A. et al, <u>Izvestiya VUZ--Fizika</u>, No 10, 1971, pp 25-32

dispersion corresponding to the modified version of the function $G(t) = ae^{\alpha t} - be^{\beta t}$ obtained by the authors, and the van Hove model is discussed. Members of the Tashkent V. I. Lenin State University, the authors conclude by thanking V. K. Usharov for his interest in the work.

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USSR

UDC 539.171.015

AZIMOV, S. A., and ARUSHANOV, G. G., Tashkent State University imeni V. I. Lenin

"The Contribution of Statistical Processes to Elastic Scattering"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, No 6, 1971, pp 17-21

Abstract: In recent years rather precise experimental data have been obtained on the angular distribution of high-energy hadrons in elastic scattering covering a wide band of angles. It has been found that the differential scattering cross sections, forward and back, have peaks, and the size of the forward peak exceeds that of the backward peak by several orders of magnitude. It is also found that the ratio of these peaks with increase in energy grows approximately as the cube of the energy in horsepower. Furthermore, the angular distribution near 90° is almost isotropic and depends greatly on the energy. In this article the authors investigate the sensitivity of statistical theory as it applies to selecting the dependence of transparency on distance in an optical model. They show that with an exponential density distribution obtained in field theory, the statistical scattering is negligibly small in comparison with the corresponding diffraction scattering. They strictly summarize the alternating series encountered in the theory. They also mention certain difficulties which arise in com-

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USSR

AZIMOV, S. A., and ARUSHANOV, G. G., Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, No 6, 1971, pp 17-21

paring theory and experiment. The article contains 10 bibliographic entries.

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AZIMOV, S. A. and ARUSHANOV, G. G., Institute of Nuclear Physics, Uzbek SSR
Academy of Sciences

"Oscillating Character of the Differential Cross Section Outside the Diffraction Peak"

Abstract: This article gives the formula for the scattering amplitude outside
the diffraction peak which has an oscillating character. The authors find that
previous results which are useful for finding the variation of partial amplitudes
with energy can not be used to analyze the fine structure of the differential
cross section. The authors give equations which prove that in the differential
cross section there are local minima and maxima and that the oscillation period
with growth in energy under certain conditions tends to zero and is approxi-
mately 1 rad. GeV/s under others. The article contains 23 equations and 8
bibliographic citations.

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USSR

UDC 539.171.016

AZIMOV, S. A. and ARUSHANOV, G. G., Tashkent State University imeni V. I. Lenin

"Behavior of the Van Hove Overlap Function Near the Diffraction Peak"

Tomsk, Izvestiya VUZ, Fizika, No 5, 71, pp 84-88

Abstract: The authors show that the condition of unitarity and the shape of
the experimentally found diffraction peak determine the dependence of the Van
Hove overlap function on the impulse transmitted in the region of the diffrac-
tion cone. The result is expressed by a linear combination of two exponents
rather than by the ordinarily used single one. If the law governing the in-
elastic process is known, then theoretically on the basis of unitarity the
corresponding elastic scattering can be computed, and vice versa. By sub-
stituting numerical values for the total cross section, the authors find that
in the Van Hove model the diffraction picture must be produced by terms which
correspond to the inelastic processes; they find this to be in complete accord
with the diffraction scattering. The new results which the authors find may
substantially change the solution to the condition of unitarity relative to
the imaginary part of the amplitude for the given overlap function, which
appears as a nonhomogeneous term in the integral equation.

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AZIMOV, S. A., et al, Izvestiya VUZ, Fizika, No 5, 71, pp 84-88

Finally, the authors briefly discuss the behavior of the functions $E(t)$ and $G(t)$ in the nonphysical region of the transmitted impulses $t \geqslant 0$. The article contains a bibliography of nine titles.

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USSR

A

UDC 539.171.⸱.ₒ

AZIMOV, S. A., and ARUSHANOV, G. G., Tashkent State University imeni V. I. Lenin

"On the Steady-State Value of the Differential Cross Section for Elastic Scattering"

Tomsk, Izvestiya VUZ, Fizika, No 4, 1970, pp 103-108

Abstract: Steady-state values are considered for the differential cross section and its derivatives in terms of the transmitted pulse t for given values of the total interaction cross section σ_t, the total elastic scattering cross section σ_{el}, and the forward scattering amplitude. Since high energies are being considered, it was more convenient to use the integral representation for the amplitude instead of the expansion of the scattering amplitude in Legendre polynomials. Lower limits are obtained for the differential elastic scattering cross sections on the basis of the most general considerations and for its derivatives in terms of the transmitted momentum at the point $t = 0$ at high energies. The problem is reduced to finding the steady-state value or extremum of a certain functional. The results are expressed in terms of total cross sections that are measurable in experiment.

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ARUSHANYAN, E. B.

Pharmacology

CERTAIN ASPECTS OF THE PARTICIPATION OF THE NEOSTRIATUM IN BEHAVIORAL CONTROL.

This survey sums up data on the role of the caudatum and the putamen in the organization of some behavioral forms. Striatal control is ensured through well manifested inhibiting mechanisms. They are indicated by three types of behavioral movements: suppression reaction, induced sleep, and specific inhibition. At the same time, the neostriatum participates in the formation of classical conditioned and instrumental reflexes. The article deals with the possible neurophysiological mechanisms of the participation of the neostriatum in behavioral control.

So far, from the functional viewpoint, the caudatum and the putamen, known jointly as the neostriatum, have been considered as one of the most puzzling formations of the central nervous system. Paradoxical though this might seem, we have very limited ideas on the significance of such massive accumulations of grey matter, most developed in mammals. It is generally acceptable to reduce the role of the neostriatum to participation in regulating movements as a leading component of descending motor systems [110]. Yet, according to Ye. K. Sepp [36], the phylogenic structure itself developed as a center of most complex unconditioned reflexes "automatically" controlling behavior in the presence of certain signals." This thought properly describes the numerous studies made in recent years. This enabled us to classify the neostriatum as part of those segments of the brain directly responsible for regulating complex behavioral forms.

The present survey has selected from the rich literary data already acquired on this matter facts applying only to two aspects of the physiology of the neostriatum, most essential from our viewpoint. A major characteristic of this formation is the capability to ensure inhibition control over behavioral reactions. The other noteworthy question is the obvious correlation between the conditioned reflex animal behavior and the integrity of basal ganglia. The following is a description of the

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[I - USSR - C]

UNCLASSIFIED   PROCESSING DATE--02OCT70
TITLE--THE INFLUENCE OF PENTYLENTETRAZOL ON BACKGROUND ACTIVITY OF SINGLE
  CORTICAL NEURONES IN STIMULATION OF THE NUCLEUS CAUDATUS -U-
AUTHOR-(02)-ARUSHANYAN, E.B., BELOZERTSEV, YU.A.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69,
  NR 4, PP 75-78
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NEURON, CEREBRAL CORTEX, CAT, INHIBITION, BLOOD PRESSURE,
  ANALEPTIC DRUG

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1938/1580   STEP NO--UR/0219/70/069/004/0075/0078

CIRC ACCESSION NO--AP0106326
                    UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0106326
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PENTYLENTETRAZOL (5-10 MG-KG
INTRAVENOUSLY) BIPHASICALLY CHANGES THE REACTIONS OF SINGLE NEURONES OF
THE SENSORIMOTOR CORTEX OF NONANESTHETIZED CATS TO A DIFFERENT FREQUENCY
OF STIMULATION OF THE NUCLEUS CAUDATUS. DURING THE FIRST ONE TWO
MINUTES AFTER PENTYLENTETRAZOL INJECTION THERE WAS OBSERVED AN
INTENSIFICATION OF CAUDATE INHIBITION AND INHIBITION OF FACILITATORY
RESPONSES. SIMULTANEOUSLY THE BACKGROUND ACTIVITY OF NEURONES
ACCELERATED. ON THE THIRD FOURTH MINUTE OF REGISTRATION THE INHIBITORY,
REACTIONS, ON THE CONTRARY, WEAKENED. THE INITIAL DEEPENING OF CAUDATE
INHIBITION IS, APPARENTLY, THE RESULT OF RISE OF THE ARTERIAL PRESSURE
CAUSED BY PENTYLENTETRAZOL.

UNCLASSIFIED

USSR   UDC: 669.721.042.62

ARUSOO, A. K., KARRO, Kh. Kh., LAUGIS, Yu. Ya., LOOTUS, Ya. K., LOYGOM, V. V.,
SAKKOS, Kh. A., TIYSMUS, Kh. A.

"MHD Drives for Pumping of Liquid Magnesium"

MGD v Metallurgii i Liteyn. Proiz-ve [MHD in Metallurgy and Foundry Produc-
tion -- Collection of Works], Kiev, 1972, pp 126-130 (Translated from
Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8G202, by G.
Svodtseva).

Translation: The Tallin Polytechnical Institute has developed and introduced
to metallurgical production several induction MHD drives for feeding liquid
Mg from a continuous refining furnace to a casting conveyor. The basic tech-
nical data are presented on the MHD drives and a schematic diagram of the power
portions is presented. The drives operate under manual control. During tapping,
the static head and hydraulic resistance are increased. This means that conser-
vation of constant productivity requires that the supply voltage be increased by
1.2-1.8 times. The channel of the pump is replaced every three to five days.
A diagram of the activity of the MHD drive under manual control is presented.

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USSR   UDC 681.325.65

ARUSTAMYAN, V. YE., GRIGORYAN, L. A., KAZARYAN, S. YE., MOMDZHYAN, I. A.,
and SARKISYAN, A. YE.

"Transistor-Transistor Logic Circuit"

Translation: There are well-known devices which contain an input multiemitter
transistor (T) connected by the collector to the base of an intermediate T,
whose collector and emitter are connected to the bases of two output series-
connected Ts. The logic circuit described differs from these in that it con-
tains a complementary T connected by its collector to the emitter of the
intermediate T, by its emitter to the collector of the input T, and by its base
through the resistor to the base of the input T. This makes it possible to
increase the operating speed of the device.

1/1

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MNDZHOYAN, A. L., (DECEASED), MARKARYAN, E. A., ALEKSANYAN, R. A., KHORENYAN, G. A., BALAYAN, R. S., and ARUSTAMYAN, ZH. S., Institute of Fine Organic Chemistry imeni A. L. Mndzhoyan, Academy of Sciences Armenian SSR, Yerevan

"Derivatives of Arylalkylamines. II. Constitution and Physiological Activity of Some Substituted Arylalkylamines and Their Derivatives"

Abstract: Bu condensing the chlorides of substituted phenylacetic, diphenyl-propionic, and diphenylacetic acids with phenyl- and phenoxyisopropylamine, amides I were prepared. Reduction with LiAlH$_4$ converted compounds I into the substituted arylalkylamines II. By cyclizing the amides according to Bishler-Napieralski and then reducing, tetrahydroisoquinoline derivatives III were synthesized. By reacting phenylisopropylamine with indanones and reducing the ketimines that formed, aminoindans IV were obtained. Hydrochlorides of compounds II, III, and IV were effective as coronary dilatants (table). The formulas and properties of compound I and of the hydrochlorides of II and III are listed in tables.

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AVAK'YANTS, G. M., Acad. Sci. Armenian SSR, ADAMYAN, Z. N., ARUTCHNYAN,
V. M., BARSEGYAN, R. S. and OGANESYAN, S. V.

"Some Studies of Zinc-Doped Silicon Diodes as Optron-Pair Elements"

Abstract: This article describes an investigation of the light-sensi-
tivity of the time characteristics of the diode structures described
in the title in order to determine the possibility of using them as
photoreceptors in optron pairs. The volt-ampere characteristics were
measured in a couple with a light-emitting diode over a broad range of
temperatures. The diodes retained their light sensitivity throughout
the entire range of temperatures, from -196° to +80° C. In contrast to
many other devices, these diodes can be switched both from the low-con-
ductivity to the high-conductivity state and from the high-conductivity
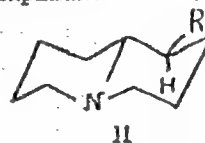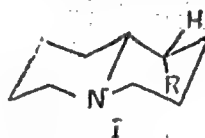to the low-conductivity state simply by changing the level of illumina-
tion.

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MNATSAKANYAN, V. A., ARUTYUNIAN, L. S., ALEKSANYAN, R. A., and MARASHYAN, E. S.,
Institute of Fine Organic Chemistry imeni A. L. Mndzhoyana, Academy of Sciences
SSR (Yerevan)

"Modification of Alkaloid Structures. V. Some Alcohols of the Lupinine and
Epilupinine Series"

Abstract: A series of eight amino alcohols, homologs derived from the
(-) lupinine (structure I, R = CH_2OH) and its diastereomer (+) epilupinine
(structure II, R_1 = CH_2OH) were synthesized from (-) lupinine.

The influence of their methiodides on the ring circulation was studied. Both
forms were obtained for R = R_1 = $CH_2CH_2CH_2OH$, $CH_2O-(CH_2)_3OH$; only I was obtained
for R = $CH_2CH(CH_2OH)_2$; and only II was obtained for R_1= CH_2CH_2OH. A number of
1/2

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USSR

MNATSAKANYAN, V. A., et al., Armyanskiy Khimicheskiy Zhurnal, Vol 25, No 1, 1972, pp 66-72

physical constants, such as n_D^{18}, $[\alpha]_D^{17}$, R_f for thin-layer chromatography, IR spectral data and others, are given for the compounds and their methiodides.

2/2

USSR

ARUTYUNOV, A. V., BANCHILA, S. N., FILIPPOV, L. P., Moscow State University imeni M. V. Lomonosov

"Measurement of the Electrical Conductivity of Tin in the Temperature Range 1000-2500°K"

Abstract: A technique is described for measuring electrical conductivity that makes it possible to obtain fairly reliable data in the temperature range 1000-2500°K and is based on the use of high-frequency induction heating of metal ampoules filled with the liquid metal to be studied. It is noted that the study of the specific electrical conductivity of liquid metals is an important element in investigating the nature of the liquid-metal state of a substance, but that the problem of the electrical resistance of liquid metals has been little studied up to the present time. The use of induction heating in the measurement device makes it possible to obtain a homogeneous temperature field in the heated sample and the device is convenient to use because of its low inertia, so that measurements can be carried out fairly rapidly. A description and circuit

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USSR

ARUTYUNOV, A. V., et al, Teplofizika vysokikh temperatur, No. 3,
May/Jun 72, pp 547-550

diagram of the device are given. A basic source of systematic error in
measuring the specific resistance was the error in determining the geo-
metry of the ampoule. The total maximum systematic error of the experiment
varied from $\sim$1 to $\sim$2% in the temperature range 1000-2500°K. The electrical
conductivity of tin of the following composition (in wt. %) was measured:
99.9995 Sn, $5\cdot10^{-5}$ Sb, 10^{-5} (Fe, Co, Au, Ag, Zn, An), 10^{-6} (Cu, Bi, Al).
The results are shown graphically. The data agrees with the data of
Cusac, Roll, and Motz within the limits of the systematic error of the
experiment. The least squares method was used to obtain the following
temperature dependence for the electrical resistance:

$$\rho = 54.42 - 0.661 \; 10^{-2} \; T + 1.522\cdot10^{-5} \; T^2 -$$
$$- 2.346\cdot10^{-9} \; T^3.$$

2/2

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1/2   028   UNCLASSIFIED   PROCESSING DATE--20NOV70
TITLE--THERMAL PROPERTIES OF SOLID AND MOLTEN METALS AT HIGH TEMPERATURES
-U-
AUTHOR-(05)-FILIPPOV, L.P., ARUTYUNOV, A.V., MAKARENKO, I.N., MARDYKIN,
I.P., TRUKHANOVA, L.N.
COUNTRY OF INFO--USSR

SOURCE--TEPLOFIZ. SVOISTVA TVERD. TEL VYS. TEMP., TR. VSES. KONF. 1966
REFERENCE--REF. ZH., FIZ. E. 1969, ABSTR. NO 12E4
DATE PUBLISHED-------66

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--THERMAL CONDUCTIVITY, LIQUID METAL, HEAT CAPACITY, ELECTRIC
CONDUCTIVITY, ELECTRIC WIRE, PHYSICAL PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0607   STEP NO--UR/0000/69/001/000/0116/0129

CIRC ACCESSION NO--AR0125341
                    UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AR0126341
ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. RESULTS OF COMPLEX HEAT
PARAMETERS, SUCH AS THERMAL COND., HEAT CAPACITY, AND ELEC. COND. OF
SOLID AND MOLTEN METALS AT GREATER THAN 1000DEGREESK ARE PRESENTED BY
VARIOUS METHODS, BY USING CYLINDRICAL SYMMETRY TEMP. WAVES (THE SO
CALLED RADIAL TEMP. WAVE), PLANE TEMP. WAVES, AND ALSO BY HEATING THE
WIRE (OR THE FOIL STRIP) BY PASSING A CURRENT THROUGH IT.

UNCLASSIFIED

ARUTYUNOV, A. V., BANCHILA, S. N., and FILIPPOV, L. P., Moscow
State University, Kaliningrad Technical Institute of the Fish
Industry and Fisheries

"Thermal, Electric, and Emissive Properties of Hafnium in the
High-Temperature Range"

Abstract: Recent results of multiple investigations by the me-
thod of variable induction heating of thermal, electric, and
emissive properties of hafnium (by wt. %: 99.3 Hf; 0.65 Zr;
0.04 SiO_2; 0.006 Al_2O_3) in the temperature range over 1000 °K
are discussed. The investigated Hf-specimen, 98 mm long and
10 mm in diam., was calcined in vacuum by 1900 °K for ∿2 hrs.
The results are discussed by reference to tabulated data and
diagrams showing the temperature dependences of the heat conduc-
tivity λ, the heat capacity c_p, the specific electric resis-
tance ρ, and the monochromate coefficient $\varepsilon_{\lambda,r}(\lambda=0.65\mu)$, in

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USSR

comparison with data of other authors. Some characteristic properties of
titanium, zirconium, and hafnium are singled out. Two illustr., one table,
seven biblio. refs.

1/2   040   UNCLASSIFIED   PROCESSING DATE--09OCT70
TITLE--THE DESIGN OF THE CONTROL SYSTEM SPACECRAFT STABILISATION WITH
  HUMAN OPERATOR -U-
AUTHOR-(05)-SOLODOVNIKOV, V.V., DMITRIEV, A.N., SEMENOV, V.V., ARUTUNOV,
  S.K., LOBUSOV, E.S.
COUNTRY OF INFO--USSR, FRANCE

SOURCE--INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL, SYMPOSIUM ON
  AUTOMATIC CONTROL, 3RD, TOULOUSE, FRANCE, MAR 2-6, 1970, PAPER, 18
DATE PUBLISHED----MAR70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, SPACE TECHNOLOGY

TOPIC TAGS--MAN, MAN MACHINE SYSTEM, MANUAL, SPACECRAFT RENDEZVOUS, ORBIT
  CORRECTION, SPACECRAFT LANDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/0006   STEP NO--FR/0000/70/000/000/0018/0018

CIRC ACCESSION NO--AT0117306
                        UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AT0117306

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONSIDERATION OF THE ACTIVE ROLE
OF MAN IN SOLVING NUMEROUS SPACE PROBLEMS SUCH AS RENDEZVOUS, MIDCOURSE
CORRECTION, LANDING, ETC. ALL THESE OPERATIONS INCLUDE MANUAL
SPACECRAFT STABILIZATION. BECAUSE OF THEIR GREAT IMPORTANCE,
ANALYTICAL DESIGN IS NECESSARY. ATTENTION IS GIVEN TO THE DYNAMIC AND
INFORMATION RESEARCH OF HUMAN OPERATOR FEATURES. THE MAJOR REASON FOR
MANUAL TRACKING IS THE NECESSITY FOR CONSTANCY OF INFORMATION
TRANSMISSION RATE. THE CORRELATION BETWEEN RANDOM DELAY TIME AND INPUT
PROVIDED AN OPPORTUNITY TO OBTAIN A STOCHASTIC DYNAMIC MODEL OF THE
OPERATOR.

UNCLASSIFIED

USSR   UDC 591.18

POPOV, A. K., VOLKOV, A. M., ARUTYUNOV, S. K., and LOBUSOV, Ye. S., Institute of Biomedical Problems, Ministry of Public Health USSR, Moscow Aviation Institute imeni S. Ordzhonikidze, and Moscow Higher Engineering Technical School imeni N. E. Bauman

"Mechanisms of Spontaneous Rhythmic Activity of the Cerebral Cortex"

Abstract: A discussion is presented of possible models in which stimulation of the cortex evokes depolarization of dendrites and excitation of internuncial neurons, which in turn show an inhibiting effect followed by hyperpolarization of dendrites. The process represents the beginning of rhythmic activity. It is assumed that the spontaneous rhythmicity of the isolated cortex is the result of bioelectrical sequential changes in the types of interactions between the dendrites and the internuncial neurons. In other words, the possibility of cortical rhythm exists because of the structural connections of the elements composing it. Thus, the systems and the subsystems interact. On the basis of analysis and the results of the modeling procedures, it is assumed that the spontaneous rhythmic activity of the nerve structures of the cortex is ensured

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·USSR

by a mechanism of strict sequential change in the types of interactions of the form

$$A \underset{+}{\overset{+}{\rightleftarrows}} B \rightarrow A \underset{+}{\overset{-}{\rightleftarrows}} B \rightarrow A \underset{-}{\overset{-}{\rightleftarrows}} B \rightarrow A \underset{-}{\overset{+}{\rightleftarrows}} B \text{ и т. д.,}$$

where A and B are mutually interacting subsystems.

2/2

Acc. Nr: AP0040900   A   Ref. Code:
                                                                    UR 0103
PRIMARY SOURCE: Avtomatika i Telemekhanika, 1970, Nr 1, pp 192-197

APPLICATION OF THEOREM OFFFOLD IN COMPLEX DOMAIN
FOR INVESTIGATION OF NONSTATIONARY CLOSED-CYCLE SYSTEMS

Arutyunov, S. K.

There is considered the problem of determining an equivalent transfer function for a closed-cycle nonstationary system of a certain type set by its structural scheme. The solution is obtained in the form of a matrix product of the column, the Laplace transformations of the equivalent input signal and the matrix of the Laplace transformations which is determined by the dynamics of the stationary part and the poles of the variable coefficient. The methods of solving the problem are illustrated with examples.

REEL/FRAME
19750639

ARUTYUNOV, SS

GLORIA

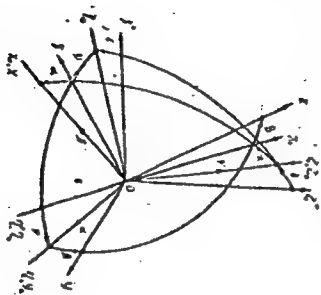# HOVE'S GYROSCOPE ON A UNIFORMLY ROTATING BASE

In this article the possibility of constructing a free gyroscope on a base, according to Hove's scheme is analyzed.

Let us assume that a Hove's gyroscope [1] is placed on a base rotating with the constant velocity gamma around its axis η_0, perpendicular to the axis ζ of the gyroscope drive (see sketch). We shall determine the position of the gyroscope drive trihedron $\xi_0 \eta_0 \zeta_0$ connected with the base, with respect to a stationary system of reference $\xi^* \eta^* \zeta^*$ by an angle gamma. Assuming that the torsion rigidities are finite only for twisting, we shall determine the angles φ, α, and β.

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USSR

ARUTYUNOV, S. S. and DMITRIYEV, G. N.

"Howe Gyroscope on a Uniformly Rotating Base"

Abstract: Assuming that a Howe gyroscope is set up on a base ro-
tating at constant velocity around an axis perpendicular to the
drive axis, the authors analyze the possibility of designing a
free gyroscope based on the Howe design. The equation of motion
of the system is derived from the Lagrangian equations of the
second kind under the assumption that the moment of the resistance
at the drive shaft is balanced by the rotational moment. The
problem of whether the parameters of the Howe gyroscope can be
chosen such that, with the base rotating, the longitudinal axis
of the rotor shaft maintains its position in space making only
small periodic oscillations, is solved. Three possible condi-
tions of the gyroscope's motion are examined. The authors, mem-
bers of the Kazan Aviation Institute, find that forced motions
of the Howe gyroscope cannot be completely eliminated.

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USSR A 531.383

ARUTYUNOV, S. S.

"Error in a Two-Stage Gyroscopic Angular Velocity Transducer Resulting From
Angular Oscillations of the Base"

Tr. Kazansk. Aviats. In-Ta [waks of Kazan' Aviat. Inst], No. 99, 1969, pp 44-48
(translated from Referativnyy Zhurnal Metrologiya I Izmeritel'naya Tekhnika, No. 4,
1970, Abstract No. 4.32.436, unsigned)

Translation: A theoretical analysis is performed of the presence of systematic
velocity components in the angular oscillations of a syroscope base. Long-term
angular oscillations of the object and the corresponding constant component of
velocity can lead to extended correction failures of many devices.

1/1

Microbiology

USSR   UDC 576.851.45+576.852.211.094.9[:576.858.9

ARUTYUNOV, Yu. I., Rostov-na Donu Antiplague Institute

"Biological Characteristics of Plague and Pseudotuberculosis Bacteriophages"

Abstract: Plague and pseudotuberculosis bacteriophages constitute two independ-
ent species. The former (22 races studied) comprise a single serological type
(I) and the latter (4 races), two types (I and II). Of the various criteria
tested as means of differentiating plague from pseudotuberculosis bacteriophages,
their serological properties were the most unambiguous and useful. Specificity
and range of action, adsorption capacity, single developmental cycle, and the in-
fluence of certain physical factors (temperature, ultraviolet irradiation) and
chemical agents (urea, methylene blue) had only auxiliary value for typing pur-
poses. Plague bacteriophage 2,662 No. 1 is recommended as an indicator, owing
to its high lytic activity, relatively short latent period, wide range of action
within a homologous species, and high specificity.

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USSR   UDC 661.183.7

KULIYEV, Al. M., GRIGORYAN, E. V., and ARUTYUNOVA, E. G., Bakinsk Branch,
All Union Scientific Research Institute of Gasses

"Study of the Effect of Chemical Composition of a Displacer on the Adsorption
Capability of Silica gel"

Baku, Azerbaydzhanskiy Khimicheskiy Zhurnal, No 5-6 (71-72), 1971, pp 90-92

Abstract: It was shown in earlier work that substituting high molecular
weight fractions of petroleum for the water molecules of a hydrogel yields
silica gel with high adsorption. This particular study was devoted to
individual fractions of petroleum, especially to their effect on the gel.
The study showed that treatment of silica gel with a displacer containing
primarily aromatic hydrocarbons will yield an adsorbent with very fine pores,
and high activity. When treated with parafine hydrocarbons, the pores in
the adsorbent become coarse.

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USSR

UDC: 911.3.616.831-002

BAROYAN, O. V., MEDVEDEVA, G. I., SHATKIN, A. A., PICHUSHKOV, A. V., BESKINA, S. R., ARUTYUNOVA, I. A., MARTYNOVA, V. R.

"Immunological-Epidemiological Research on Tick-Borne Encephalitis"

/No abstract/

1/1

1/2   020   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--A CHROMIUM CATALYST -U-

AUTHOR-(04)-GUREVICH, V.R., GOLIKOVA, V.I., ARUTYUNOVA, K.M., OALIN, M.A.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 186,390
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, 47(9)
DATE PUBLISHED--03MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHROMIUM, CHEMICAL PATENT, CATALYST, CATALYTIC POLYMERIZATION, ALKENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0847   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0136281
                          UNCLASSIFIED

CIRC ACCESSION NO--AA0136281
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CR CATALYST, HAVING A HIGHLY
 DEVELOPED SURFACE, FOR POLYMN. OF OLEFINS, IS PREPD. BY SATG. SILICA GEL
 WITH A SOLN. OF CR ANHYDRIDE IN AN ORG. LIQ., E.G. IN ACETONE.
 FACILITY: VSESOYUZNYY NAUCHNO-ISSLEDOVATEL'SKIY INSTITUT PO POLUCHENIYU
 I PERERABOTKE NIZKOMOLEKULYARNYKH OLEFINOV S OPYTNYM ZAVODOM.

UNCLASSIFIED

USSR

ARUTYUNYAN, A. G., TUNKIN, V. G., and CHIRKIN, A. S.

"Light-Power Interferometer with High Resolution for Measuring Spatial Coherence of Optical Radiation"

Translation: The design of an interferometer constructed to measure small radii of spatial coherence of light radiation, which has a number of advantages over the Young and Mach-Zehnder interferometers used for the same purpose, is described. Results are given of measurements using the described interferometer for the space correlation function of helium-neon laser radiations and aluminum-yttrium garnet laser oscillations. These latter oscillations had a coherence radius of ~0.1 mm in the oscillation of many transverse modes for a beam radius of 5 mm. Authors' abstract

1/1

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USSR   UDC: 621.391.19

ARUTYUNYAN, A. M., Irkutsk Polytechnical Institute

"A Device for Pattern Recognition"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 15, Apr 73, Author's Certificate No 374636, Division G, filed 20 Oct 70,
published 14 Jul 73, pp 112-113

Translation: This Author's Certificate introduces a device for pattern
recognition which contains a lens optically coupled to a transmitting tele-
vision tube whose output is coupled through a video amplifier and frame
and line switches to a flip-flop module connected to the input of a clas-
sifier. The device also contains a control unit which is connected to the
flip-flop module and to the output of the device, through frame and
line distributors to the frame and line switch module, and through an image
coordinate changing module to the objective lens and the television trans-
mitting tube. In addition, the device contains a linear voltage generator.
As a distinguishing feature of the patent, recognition reliability is im-
proved by adding a block of random voltage generators and a commutator.
The commutator inputs are connected respectively to the outputs of the linear

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USSR

ARUTYUNYAN, A. M., USSR Author's Certificate No 374636

voltage generator and to the outputs of the block of random voltage gener-
ators, while the commutator output is connected to the deflecting system
of the television transmitting tube.

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Organometallic Compounds

2

USSR

UDC 548.737

KUZ'MINA, L. G., BOKIY, N. G., STRUCHKOV, YU. T., ARUTYUNYAN, A. V., RYBIN, L. V., and RYBINSKAYA, M. I., Institute of Metalorganic Compounds, Academy of Sciences USSR

"Structure of 3,6-Duphenylpyridazino-diferrum-triphenylphosphine-pentacarbonyl"

Abstract: To determine objectively the structure of diarylpyridazine complexes with iron carbonyls, a complete roentgenographic analysis of the monophosphine complex $[(C_6H_5)_2C_4H_2N_1] \cdot [Fe_2P \cdot (C_6H_5)_3(CO)_5]$ was carried out. The binuclear molecule contains $Fe(CO)_3$ and $Fe(CO)_2PPh_3$ groups connected with a Fe-Fe bond and two nitrogen bridge atoms of the pyridazine moiety. Fe atoms are of the octahedral coordination, they are highly strained due to the formation of tetrahedral cluster system Fe_2N_2. The crystals are monoclinic with a= 23.98, b = 18.34, c= 8.39 Å $\beta = 107°20'$, and and N = 4. The structure was obtained by the heavy atom method and refined by the least squares method to R = 12%. The pyridine ring acts as a diazobridge between two iron atoms also connected by the metal-metal bond. The most interesting bond lengths are: Fe-Fe = 2.53; N-N = 1.43; Fe-N = 1.92 Å. 1/1

USSR

UDC 621.396.677.012.12.001.57:535

ARUTYUNYAN, Dzh. S., KUROCHKIN, A. P.

"Optical Modeling of the Radiation Patterns of Antennas From a Radio-hologram of the Field in the Fresnel Zone"

Abstract: The authors consider the particulars of reconstructing the radiation patterns from a radiohologram of the field measured in the Fresnel zone. Expressions are derived for displacement of the plane of the radiation pattern from the focus of the lens, and the correspondence is found between the angular coordinates in the field of the antenna and the Cartesian coordinates in the plane of the radiation pattern. A relationship is found for calculating defocusing of the antenna through the distance between the plane of the radiation pattern and the plane of optimum focusing.

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Antennas

UDC: 621.396.677:621.317.743

USSR

ARUTYUNYAN, R. S., ARUTYUNYAN, Dzh. S.

"Optical and Radio Holography in Antenna Measurements"

Dokl. Nauchno-tekhn. seminara "Metrol. v radioelektron." Tezisy. Ch. 1 (Reports of the Scientific and Technical Seminar on Metrology in Radio Electronics, Summaries, Part 1), Moscow, 1970, p 92 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6B84)

Translation: The authors consider the possibility of recording and later reproducing electromagnetic waves in the optical frequency range. Possible systems for radio holography are given. The advantages of a system of radio holography with a reference signal are noted. Consideration is given to the possibility of simulating "slow" reference waves by utilizing a phase change in the input reference signal to produce a spatially separate signal wave in the optical range. Radio holography circuit parameters are determined on the basis of requirements for accuracy in reproduction of the recorded rf field in the optical region. Use of the method of radio holography is especially valuable for modeling the radiation patterns of large antennas in the optical region. An experiment is described in radio holographic recording of the emission field in the aperture of a parabolic antenna in the 8 mm wavelength range. The problem of changing from radio holograms to optical holograms is considered. An optical system is given for reproducing the field at the aperture of an antenna and subsequent modeling of the radiation pattern using the techniques of coherent optics. The problem of accuracy in modeling antenna radiation patterns is experimentally analyzed. Resumé.

1/1

TITLE--ACTIVATING METHYLTHIO DERIVATIVES OF PURINE AND PYRIMIDINE IN
   REACTIONS WITH WEAKLY NUCLEOPHILIC COMPOUNDS -U-

AUTHOR-(05)-GRACHEVA, YE.P., VOLKOVA, Z.S., GUNAR, V.I., ARUTYUNYAN, E.A.,
   ZAVYALOV, S.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 420-3

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, CHEMISTRY

TOPIC TAGS--URACIL, PURINE, PYRIMIDINE, HYDROGEN SULFIDE, COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0854   STEP NO--UR/0062/70/000/002/0420/0423

CIRC ACCESSION NO--AP0119758
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0119758
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. 6,METHYLTHIOPURINE (I) AND HGCL
  SUB2 IN ETOH GAVE A 1:1 COMPLEX, DEOCMPD. 215-18DEGREES, WHICH WITH H
  SUB2 S REGENERATED THE PURINE. PHNH SUB2 AND HGCL SUB2 WITH I GAVE
  77PERCENT 6,ANILINOPURINE, M. 284-6DEGREES, WHILE RHO-CHLOROANILINE GAVE
  6,(RHO,CHLOROANILINO) PURINE, M. 317-19DEGREES. I AG SALT AND ACCL IN C
  SUB6 H SUB6 GAVE THE 9,AC DERIV. OF I, M. 134-6DEGREES, WHICH WITH PHNH
  SUB2 3 HR AT 110DEGREES GAVE 45PERCENT 6,ANILIO, 9,ACETYLPURINE, M.
  271-2DEGREES, WHILE HOLDING WITH AQ. MENH SUB2 2 HR GAVE 71PERCENT
  6,METHYLAMINO,9,ACETYLPURINE, M. 219-21DEGREES. S,
  METHYL,6,METHYL,2,THIOURACIL AND HGCL SUB2 TREATED WITH BUOH IN THE
  PRESENCE OF PRIDINE 6 HR AT REFLUX GAVE 37PERCENT 2,BUTOXY,4,
  HYDROXY,6,METHYLPYRIMIDINE, M. 87-8DEGREES, WHICH WITH AQ. HCL GAVE
  6,METHYLURACIL. SIMILARLY, S,METHYL,2,THIOURACIL GAVE 2,
  BUTOXY,4,HYDROXYPYRIMIDINE, M. 85-6DEGREES. THUS, HGCL SUB2 CATALYZES
  AMINATION OF I AND ALCOHOLYSIS OF S-ME THIOURACILS.   FACILITY:
  INST. ORG. KHIM. IM. ZELINSKOGO, MOSCOW, USSR.

UNCLASSIFIED

1/2 010 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--REACTION OF URACILS WITH PHOSPHORIC ACID AMIDES -U-

AUTHOR-(03)-ARUTYUNYAN, E.A., GUNAR, V.I., ZAVYALOV, S.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (4), 904-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--URACIL, PHOSPHORIC ACID, AMIDE, CHEMICAL REACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0444 STEP NO--UR/0062/70/000/004/0904/0909

CIRC ACCESSION NO--AP0131083

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0131083

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AMINE HCL AND POCL SUB3 CATALYZE THE REACTIONS OF URACILS WITH AMIDES OF PHOSPHORIC ACID IN WHICH POSSIBLY THE CARBONYL FORMS OF URACILS TAKE PART THROUGH A 4 CENTER REACTION INTERMEDIATE. HEATING URACIL WITH ME SUB2 NH. HCL AND (ME SUB2 N)SUB3 PO 1 HR AT 235DEGREES GAVE 75PERCENT 2,4 BIS(DIMETHYLAMINO) PYRIMIDINE, M. 38-41DEGREES; WITHOUT ME SUB2 NH.HCL THE YIELD WAS BUT 56PERCENT IN 2.5 HR. (FORMULAS SHOWN ON MICROFICHE).   FACILITY: INST. ORG. KHIM. IM. ZELINSKOGO, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 539.26 + 547.466

AVOYAN, R. L., ARAKELOVA, E. R., and ARUTYUNYAN, E. G., Institute of Fine
Organic Chemistry Imeni A. L. Mndzhoyan, Academy of Sciences Armenian SSR,
(Yerevan)

"Conformation and Physiological Activity of Molecules. VI X-ray Structural
Analysis of the γ-Diethylaminopropyl α-Diphenylacetate Hydrobromide"

Abstract: A complete x-ray structural analysis of the title compound has been
carried out. Its crystals are monoclinic. The parameters of the unit cell are
found to be: $a = 17.26$, $b = 7.43$, $c = 17.45$ Å, $\beta = 110.5°$, $N = 4$, space group
$P2_1/c$. The structure has been determined by the heavy atom method using the
least square calculations up to $R = 0.197$. The nitrogen atom is attached to
bromine through a 3.38 Å hydrogen bonding. The physiological activity charac-
teristic of the title compound is discussed by comparing its structural relation-
ship with those of acetylcholine and L(+)muscarine.

- END -

1/1

CSO: 1841-W

1/2   026   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--X RAY DIFFRACTION STUDY OF DERIVATIVES OF TRYPSIN INHIBITED BY
DIISOPROPYL FLUOROPHOSPHATE -U-
AUTHOR-(05)-VAYNSHTEYN, B.K., ARUTYUNYAN, E.G., ZAYTSEV, V.N., KURANOVA,
I.P., GREBENKO, A.I.
COUNTRY OF INFO--USSR

SOURCE--KRISTALLOGRAFIYA 1970, 15(1), 167-8

DATE PUBLISHED------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TRYPSIN, PLATINUM COMPOUND, MERCURY COMPOUND, ENZYME ACTIVITY,
INHIBITION, FLUORINATED ORGANIC COMPOUND, ORGANIC PHOSPHORUS COMPOUND, X
RAY DIFFRACTION ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0223   STEP NO--UR/0070/70/015/001/0167/0168

CIRC ACCESSION NO--AP0119219
                        UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119219

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PT AND HG DERIVS. OF TRYPSIN WERE
PREPD. BY THE DIFFUSION METHOD, AND THE COORDINATES OF THE PT AND HG
ATOMS IN THE CRYSTALS WERE DETD. BY X RAY DIFFRACTION. THE UNIT CELL
PARAMETERS ARE A 58.65 PLUS OR MINUS 0.01, B 67.05 PLUS OR MINUS 0.01,
AND C EQUALS 54.75 PLUS OR MINUS 0.02 ANGSTROM FOR THE PT DERIV. AND A
58.58 PLUS OR MINUS 0.02, B 67.42 PLUS OR MINUS 0.02, AND C 54.75 PLUS
OR MINUS 0.02 ANGSTROM FOR THE HG DERIV. THE MAX. DEVIATIONS FROM THE
PARAMETERS OF THE INITIAL TRYPSIN UNIT ALL WERE 0.34 AND 0.06 ANGSTROM
FOR THE PT AND HG DERIVS., RESP. THE COORDINATES OF THE HG ATOM WERE
DETD. TO BE X EQUALS 0.962, Y EQUALS 0.035, AND Z EQUALS 0.195. FOR PT,
HOWEVER, CALCNS. YIELDED 2 VARIATIONS OF THE COORDINATES.
FACILITY: INST. KRISTALLOGR., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 541.69+543.422.8

AVOYAN, R. L., ARAKELOVA, E. R., AVETISYAN, A. A., and ARUTYUNYAN, E. G.,
Institute of Fine Organic Chemistry Imeni A. L. Mndzhoyan, Acad. Sc. Armenian
SSR (Yerevan)

"Conformation and Physiological Activity of Molecules. I. Roentgenographic
Study of the γ-Diethylaminopropyl Ester Hydrobromide of α-Ethoxydiphenyl-
acetic Acid"

Abstract: A total X-ray structural analysis has been carried out on the hydro-
bromide of γ-diethylaminopropyl ester of α-ethoxydiphenylacetic acid -- an
analog of the medicinal preparation etpenal with both the nicotino- and mus-
caryolytic activity. On the basis of three dimensional series of Petterson and
Fourier analysis and by the method of least squares up to R = 0.165 the
crystalline structure was determined. The elementary cell is monoclinic with
following parameters: a = 19.87, b = 7.71, c = 16.78, β = 114.5°, N = 4 (coordi-
nation number P_{2_1}). The number of independent non-zero reflections is 640.

The coordination of the N-atom is represented by a "deformed" tetrahedron, three
sites being occupied by carbon atoms C_{19}, C_{20}, and C_{22}, the fourth -- by the
hydrogen atom of the N-H···Br hydrogen bond. The H···Br distance is 3.44 Å.
1/1

- 64 -

MNDZHOYAN, A. L. (Deceased), AVOYAN, R. L., AVETISYAN, A. A., and ARUTYUNYAN, E. G., Institute of Fine Organic Chemistry Imeni A. L. Mndzhoyan, Acad. Sc. Armenian SSR (Yerevan)

"Conformation and Physiological Activity of Molecules. II. X-ray Structural Analysis of Diteline"

Abstract: Final results of the x-ray structural analysis of diteline are reported. The compound -- the dimethiodide of dimethylaminoethyl ester of succinic acid -- is used in medicine as a muscle relaxant. Three dimensional x-ray diffraction analysis showed the parameters of the elementary cell to be: $a = 12.79$; $b = 8.29$; $c = 9.73$ Å; $\beta = 96.8°$; $N = 2$; and the coordination number = P_{2_1}. The number of independent reflections was 630. The structure was determined by the heavy atom method and correlated by Fourier analysis and by the method of least squares up to $R = 0.135$. The molecule has the shape of a horseshoe. The N^+CCO fragments are gauche. The $N^+...N^+$ interatomic distance has been determined to be 7.75 Å.

1/1

USSR

UDC: 517.512

ARUTYUNYAN, F. G.

"Representing Functions Measurable Almost Everywhere by Convergent Series"

Moscow, Matematicheskiy Sbornik, No 4, 1973, pp 483-520

Abstract: The following theorem is stated: There exists a trigonometric series

$$\frac{a_0}{2} + \sum_{n=1}^{\infty} a_n \cos nt + b_n \sin nt$$

with the characteristic that, for any measurable function $f(t)$ defined in $[0, 2\pi]$ -- where $f(t)$ may be $+\infty$ and $-\infty$ in positive-valued sets -- and for any natural number N, there is a partial series of this series

$$\sum_{k=1}^{\infty} a_{n_k} \cos n_k t + b_{n_k} \sin n_k t, \quad N < n_1 < \ldots < n_k < \ldots,$$

convergent to $f(t)$ almost everywhere in the set in which the function $f(t)$ is finite, and convergent in measure to $f(t)$ in $[0, 2\pi]$. The present article proposes a method of proving this theorem for a broad class of systems of functions which includes almost all classical, fully orthonormalized systems and all previously considered representational systems. It is noted that the fundamental results of this article was communicated to the International Congress of Mathematicians, held in 1966.
1/1

- 4 -

USSR

ARUTYUNYAN, G. M. (Institute of Physical Studies, Armenian Academy of Sciences)

"Proper-Dimension-Quantized Semiconductors in the Field of a Strong Electro-magnetic Wave"

Yerevan, Izvestiya Akademii Nauk Armyanskoy SSR: Fizika; November-December, 1972; pp 413-7

ABSTRACT: The article concerns the interaction of strong, classical electro-magnetic waves with semiconductor films. The problem allows an exact solution for the resonance approximation. The exact wave functions and electron spec-trum are obtained, taking into account the zonal structure. The characteristic feature of the energy spectrum is the existence of an "anisotropic" gap depend-ing on the field and quantization size and located at some resonant momentum value p_0. It is shown that population inversion takes place when $p < p_0$.

The article includes 18 equations and two figures. There are seven bibliographic references.

1/1

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USSR

ARUTYUNYAN, G. M., and KAZARYAN, E. M., (Engineering-Physics Institute, Academy of Sciences, Armenian SSR, and The Yerevan State University)

"Self-Absorption in Thin Semiconductor Films in the Field of an Intense Electromagnetic Wave"

Abstract: The energy spectra of charge carriers contain gaps which are determined by the angle between the direction of the electron impulse and the tension vector of the electric field wave. In the present study it was shown possible to determine the size of the gap from interzonal absorption of a weak electromagnetic wave in the presence of an intense wave in dimensionally quantified semiconductor films. The results showed that the presence of the gap leads to a zero absorption coefficient in the region in which the frequency is changed. Determinations of dimensional quantification make it possible to calculate the size of the gap (by changing film thickness) and the regions of transmitted and amplified frequencies.

1/1

NIKITSKAYA, YE. S., ARUTYUNYAN, G. S., SHVARTS, G. YA., MASHKOVSKIY, M. D.,
and YAKHONTOV, L. N., All Union Scientific Chemical-Pharmaceutical Research
Institute imeni S. Ordzhonikidze, Moscow

"Synthesis and Pharmacological Study of Substituted 2,2,6,6-Tetramethyl-4-
-aminopiperidyl-4-carboxamides"

Abstract: Derivatives of 2,2,6,6-tetramethyl-4-aminopiperidyl-4-carboxamide
(I) -- analogues of the pyrithramide -- were synthesized in search for new
analgesic agents. The reaction sequence was based on triacetoneamine being
converted through the triacetoneaminecyanohydrine to 2,2,6,6-tetramethyl-4-
-(N-substituted)amino-4-cyanopiperidines which could be converted with 90%
sulfuric acid at 100° to (I). Further alkylation of these carboxamides was
very difficult. Pharmacological studies carried out on these products showed
that steric hindrance around the cyclic nitrogen atom with methyl groups did
not improve the analgesic or other pharmacological properties of the parent
agents.

1/1

USSR   UDC 547.752

VINOGRAD, L. KH., SHALYGINA, O. D., BULATOVA, N. N., KOSTYUCHENKO, N. P.,
ZYKOVA, T. N., MIKERINA, A. L., ARUTYUNYAN, G. S., and SUVOROV, N. N., All-
Union Scientific Research Chemical and Pharmaceutical Institute imeni Sergo
Ordzhonikidze, Moscow

"Indole Derivatives. Report 72. Addition of Sulfur-Containing Reagents to
Nitrovinylindole"

Abstract: The addition of sulfur-containing nucleophilic reagents to unsat-
urated nitro-compounds of the indole series was studied. The addition reactions
of seven new indole derivatives are detailed and the addition products identified.
In-vitro therapeutic tests revealed a weak germistatic activity (500-250
mcg/ml) in 1-benzylmercapto-1-(1'-acetylindolyl-3)-2-aminoethane chloralhydrate
relative to 17 microorganism strains. The study included general effects,
effects on smooth muscles, circulation and respiration body temperature, inter-
action with hexenal and iprazid, antihistaminic, antispasmodic and anesthetic
effects. The compound revealed weak pharmacological activity, weak spasmogenic
action and slightly increased capillary permeability. It appears to promote
the somnifacient effect of hexenal. The LD_{50} in intravenous administration to
mice is 45 mg/kg. (1 table, 1 biblio. reference)
1/1

USSR

ASKAR'YAN, G. A.; ARUTYUNYAN, E. N.; POGOSYAN, V. A. (Lebedov Physics Institute, USSR Academy of Sciences)

"Multiphoton Processes in the Focus of a Powerful Laser Beam with Allowance for Expansion of the Active Volume"

Abstract: A multiphoton process in the focus of laser radiation or near the focus points of individual modes is considered. It is shown that for high radiation densities saturation and expansion of the active volume occur. This appreciably modifies the dependence of the number of events on the field strength, $N(E)$ E^K: in particular, in very strong fields N E^3 and does not depend on quantization of the process. Various types of field distribution -- e.g., a cone with a focus constriction or a Gaussian radial distribution -- are considered. Results and conclusions of experiments on multiphoton ionization of atoms and molecules by a laser beam are critically considered. It is noted that the results obtained can be employed for determining the initiating volume of multiphoton ionization in a flash of light.

1/1

MULTIPHOTON PROCESSES IN THE FOCUS OF A POWERFUL LASER BEAM WITH ALLOWANCE FOR EXPANSION OF THE ACTIVE VOLUME

Arutyunian, L. N.; Askar'yan, G. A.; Pogosyan, V. A.

A multiphoton process in the focus of laser radiation or near the focus points of the modes is considered. It is shown that for high radiation densities saturation and expansion of the active volume occurs. This appreciably modifies the dependence of the number of acts on the field strength, $N(E) \sim E^k$; in particular in very strong fields $N \sim E^3$ and does not depend on quantization of the process. Various types of field distribution, e.g. a cone with a focus constriction or a Gaussian radial distribution are considered. Results and conclusions of experiments on multiphoton ionization of atoms or molecules by a laser beam are critically considered. It is mentioned that the results obtained can be employed for determining the initiating volume of multiphoton ionization in a light spark.

REEL/FRAME
19770185

1/2   022   UNCLASSIFIED   PROCESSING DATE--09OCT70
TITLE--THE SIGNIFICANCE OF BODY REACTIVITY IN FORMATION OF ADHESIONS IN
   EXPERIMENTAL TALCUM ADMINISTRATION INTO THE ABDOMINAL CAVITY -U-
AUTHOR-(03)-MINASYAN, A.M., TERKASPAROVA, M.R., ARUTYUNYAN, L.O.

COUNTRY OF INFO--USSR

SOURCE--EKSPERIMENTAL'NAYA KHIRURGIYA I ANESTEZIOLOGIA, 1970, NR 2, PP
   48-50
DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ADHESION, ANIMAL PHYSIOLOGY, INHIBITION, TRYPSIN, EXPERIMENTAL
   SURGERY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/0646   STEP NO--UR/0481/70/000/002/0048/0050

CIRC ACCESSION NO--AP0108857
                    UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AP0108857
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADHESIONS FORM IN THE SENSITIZED
 ANIMALS TWICE OFTENER THAN IN THE CONTROL GROUP. IN DESENSITIZED
 ANIMALS ADHESIONS WERE SEEN IN ONLY ONE THIRD OF CASES. ADMINISTRATION
 OF LIDASE AND TRYPSIN TO SENSITIZED ANIMALS PREVENTS FORMATION OF
 ADHESIONS.   FACILITY: KAFEDRA GOSPITAL'NOY KHIRURGII, KAFEDRA
 PATOLOGICHESKOY ANATOMII AND KAFEDRA PATOLOGICHESKOY FIZIOLOGII
 YEREVANSKOGO MEDITSINSKOGO INSTITUTA.

UNCLASSIFIED

USSR
UDC 547.94

MNATSAKANYAN, V. A., ARUTYUNYAN, L. S., and AGABABYAN, E. YU., Institute of
Fine Organic Chemistry imeni A. L. Mndzhoyan, Academy of Sciences Armenian
SSR, Yerevan

"Modification of the Structure of Alkaloids. Synthesis of Amino Derivatives
of Lupinane and Epilupinane"

Abstract: With the view of continuing a study of the pharmacological pro-
perties of derivatives of lupinane and epilupinane, the diastereomeric
aminomethyl- and aminoethylquinolizidines were prepared starting from
lupinine and epilupinine. The aminomethylquinolizidines aminolupinane and
aminoepilupinane were prepated according to G. R. Clemo et al (J. Chem.
Soc., 429, 1931), while the aminoethylquinolizidines homoaminolupinane and
homoaminoepilupinane were obtained upon reduction with $LiAlH_4$ of cyanolupinane

and cyanoepilupinane, respectively. The aminoalkylquinolizidines were
acylated with the chlorides of acetic, homoveratric, and homopiperonic acids
thereby converted into the corresponding amides. Reduction of the amides with
$LiAlH_4$ resulted in the formation of amines. The physical properties of the
1/2

USSR

MNATSAKANYAN, V. A., et al., Armyanskiy Khimicheskiy Zhurnal, Vol 26, No 4, 1973, pp 325-331

nine amines and nine amides that have been synthesized are listed in tables. Deamination of aminolupinane and aminoepilupinane in benzene with $NaNO_2$ and

50% acetic acid resulted in the formation of (-)lupinine + O-acetyllupinine and (+)epilupinine + O-acetylepilupinine, respectively. No rearrangement took place.
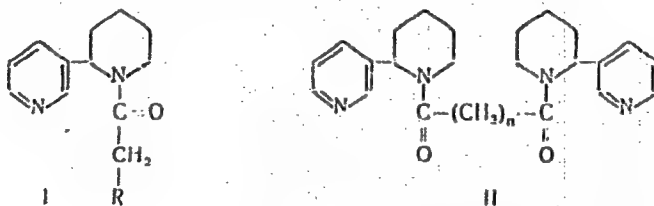
2/2

USSR

UDC 547.821+547.91

ARUTYUNYAN, L. S., TSATINYAN, A. S., AVAKYAN, O. M., KARAGEZYAN, S. G.,
SARAFYAN, V. G., and MNATSAKANYAN, V. A., Institute of Fine Organic Chemistry
imeni A. L. Mndzhoyana, Academy of Sciences Armenian SSR (Yerevan)

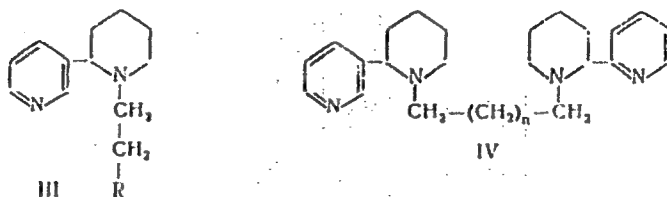"Modification of Alkaloid Structures. VI. Some N-substituted Anabazines"

Abstract: Alkylhydroxyphenyl groups were substituted at the 2-, 3-, and 4-
position of structures I, II, III, and IV.

1/2

- 5 -

USSR

ARUTYUNYAN, L. S.,et al., Armyanskiy Khimicheskiy Zhurnal, Vol 25, No 1, 1972, pp 78-80

The products were separated and purified by thin-layer chromatography, and identified by their IR spectra. A table presents the values of $[\alpha]_D^{22}$, R_f, boiling point, and percent yield for all the compounds.

2/2

Alkaloids

ARUTYUNYAN, L. S., KAYTANDZHYAN, M. A., MNATSAKANYAN, V. A., and MNDZHOYAN,
A. L., Institute of Fine Organic Chemistry, Acad. Sc., Armenian SSR

"Modification of Alkaloid Structures.   III.   Some N-Alkoxybenzyl-(benzoyl)-
anabazines"

Abstract: While studying the structure-activity relationships, a series of
N-alkoxybenzoylanabazines (I) and N-alkoxybenzylanabazines (II) were synthe-
sized. To obtain (I), anabazine was dissolved in benzene and a benzene
solution of the respective acyl chloride was added to it, followed by a 10%
KOH solution and another portion of acyl chloride in benzene. The mixture
was refluxed 6 hrs with stirring, cooled and mixed with 2% acetic acid. The
benzene layer was separated, washed with 2% acetic acid solution, water, and
5% NaOH, dried and benzene was evaporated to yield (I). To obtain the amines
(II), (I) was dissolved in ether and reduced with $LiAlH_4$. Most of the above
products are dense oils. Physical properties are tabulated for individual
compounds.

1/1

USSR   UDC 669.1:539.216:538.248

ARUTYUNYAN, R. G., YEGIYAN, K. A., YEDIGARYAN, A. A., KOKOYAN, A. B., and
ALANAKYAN, G. A., Yerevan Scientific Research Institute of Mathematical
Machines

"Effect of Roughness and Thickness on the Coercive Force of Cylindrical
Iron-Nickel Films"

Abstract: A study was made of the nature of coercive force H_c in cylindrical
iron-nickel films, 0.4-2.2 microns thick, having a magnetoelastic constant
close to zero. Two groups of films were investigated: smooth and rough films
deposited respectively on polished and specially etched beryllium-bronze
wire, 0.25 mm in diameter. In both cases an amorphous Ni-P alloy sublayer was
applied to eliminate the effect of the wire's crystal structure. Sublayer
roughness was altered by varying the wire-etching current density i_E and bath
temperature T. From examination of microphotographs the following features
were noted: 1) films deposited on the polished wire with $i_E = 0$ had an extremely
smooth surface with an average diameter of heterogeneities of approximately
0.1 microns but with a large spread amounting to 0.01-0.05 microns; 2) in-
crease in i_E led to the formation of a characteristic hilly surface and sharp
rise of H_c and the anisotropic dispersion φ_{80} with the highest value of
1/2

USSR

ARUTYUNYAN, R. G., et al, Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No 4, 1973, pp 732-736

H_c = 1.8 erg observed at i_E = 16 ma-cm^2 and D (hill diameter) and h (hill height) equal to 1.5 and 0.25 microns, respectively. After 16 ma-cm^{-2}, hill size diminishes; 3) a definite relationship exists between H_c, φ_{80} and D, h. 5 figures, 9 bibliographic references.

2/2

- 45 -

USSR

UDC 616.001.28

ARUTYUNYAN, R. K., and TOKHIYAN, S. R., Sector of Radiobiology, Ministry of Health Armenian SSR

"Hematological and Electrocardiographic Shifts in Radiation Sickness Induced on a Background of Impaired Function of the Posterior Hypothalamus"

Abstract: Male rabbits were subjected to bilateral electrolytic coagulation of mammilary bodies at the P-3 level. At the height of the clinical development of diencephalic pathology, the animals were irradiated once with a dose of 600 r. Destruction of mammilary bodies caused a slight rise of rectal temperature, body weight loss, keratitis, conjunctivitis, loss of hair, and occasional paralysis. The animals also refused food and water. The number of erythrocytes in peripheral blood dropped progressively, accompanied by leucocytosis. The electrocardiograms showed lower voltage of the QRS-complex and a slower heartbeat. All symptoms reached a peak 14-15 days after the operation. Control animals showed no statistically significant changes at that time. After irradiation, the animals with destroyed mammilary bodies showed a much more acute course of the disease in comparison to the controls. The experimental animals experienced long-lasting anemia, accute leukopenia, lymphopenia, and neutrophilia; four of 17 animals died.
1/1

Antennas

USSR

UDC: 621.396.677:621.317.743

ARUTYUNYAN, R. S., ARUTYUNYAN, Dzh. S.

"Optical and Radio Holography in Antenna Measurements"

Translation: The authors consider the possibility of recording and later reproducing electromagnetic waves in the optical frequency range. Possible systems for radio holography are given. The advantages of a system of radio holography with a reference signal are noted. Consideration is given to the possibility of simulating "slow" reference waves by utilizing a phase change in the input reference signal to produce a spatially separate signal wave in the optical range. Radio holography circuit parameters are determined on the basis of requirements for accuracy in reproduction of the recorded rf field in the optical region. Use of the method of radio holography is especially valuable for modeling the radiation patterns of large antennas in the optical region. An experiment is described in radio holographic recording of the emission field in the aperture of a parabolic antenna in the 8 mm wavelength range. The problem of changing from radio holograms to optical holograms is considered. An optical system is given for reproducing the field at the aperture of an antenna and subsequent modeling of the radiation pattern using the techniques of coherent optics. The problem of accuracy in modeling antenna radiation patterns is experimentally analyzed. Resumé.

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UDC: 669.018+621.386.8

ARUTYUNYAN, S. V.

"Investigating the Transition from Atomic Order to Disorder in Fe$_3$(Al,Si) Alloys Connected with the Formation of the K Effect"

Yerevan, Izvestiya Akademii Nauk Armyanskoy SSR--Seriya tekhnicheskikh nauk, Vol. 23, No. 6, 1970, pp 36-42

Abstract: This is the fourth of a series of papers written by the author on the same subject. The present paper gives the results of an experimental investigation into the transition process from atomic order to disorder through the use of high-temperature X-ray diffractometry and by measuring the specific electrical resistance at room and high temperatures. A curve plotted for the resistivity of the alloy as a function of its aluminum content shows definite minima in resistance for Fe$_6$AlSi and Fe$_{75}$Al$_{18}$Si$_7$. This indicates the formation of a three-component superstructure at the minima as compared with triple ordered alloys corresponding to either

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side of the minima. Such a sudden drop in resistivity is char-
acteristic of disordered atomic composition in alloys. Curves
of the resistivity as a function of the temperature of the alloy
show that a change in curvature is found only at the Kurnakov
point, which means that the change is connected with the K effect.

Methods developed for displaying superstructural lines on an RKD
camera with a monochromator and for investigating metal powders at
high temperatures are described.

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ARUTYUNYAN, V. M. and AVETISYAN, G. K.

"Reflection and Capture of Charged Particles by a Plane Electro-
magnetic Wave in a Medium"

Abstract: The interaction of charged particles with a plane elec-
tromagnetic wave in a medium with an index of refraction greater
than unity is examined. If the wave field exceeds some critical
value, the external particle cannot penetrate the wave nor can a
particle within the wave break out of it. The cause of this phe-
nomenon is that in a medium of this type, the velocity of the par-
ticle may be equal to the phase velocity of the wave, and the par-
ticle may absorb or eject Cerenkov photons. Also considered in
this brief communication is the motion of the particle in the field
of the wave, the analysis for which begins with the classical equa-
tions of motion of a relativistic particle, and is limited to the
case in which the index of refraction of the wave exceeds unity.
The case in which the particle is initially inside the wave is ex-
amined, and some possible applications of the effect are briefly
explored.
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Immunology

USSR   UDC 616.981.42+591.445

TOROSYAN, S. Ye., MARDZHANYAN, D. S., MELIKYAN, D. A., and ARUTYUNYAN, V. M.,
Armenian Scientific Research Institute of Animal Husbandry and Veterinary
Medicine

"The Relationship Between Lymph Nodes and Adrenal Glands During Immunogenesis
in Rabbits With Brucellosis"

Abstract: In order to investigate the functional relationship between lymph
nodes and adrenal glands, control rabbits and previously vaccinated rabbits
were infected with Brucella melitensis strain No 74. The concentration of
specific antibrucellosis agglutinins increased in the lymph nodes faster than
in the blood. Maximum immunological reactivity in regional lymph nodes (those
near the site of inoculation) was observed on the 7th day after vaccination
and on the 20th day after infection. In mesenteric lymph nodes, immunological
reactivity developed 3-5 days later and was less intense. The agglutinin
titer in blood serum gradually increased to reach a maximum on the 20th day
after vaccination. Control rabbits had the highest agglutinin titer in blood
and in lymph nodes on the 20th day after infection. The immunological activ-
ity of the adrenal glands was determined according to the concentration of

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TOROSYAN, S. Ye., et al, Biologicheskiy Zhurnal Armenii, Vol 23, No 12, pp 77-79

ascorbic acid and cholesterol. The concentration of both these substances decreased in the adrenal glands on the 7th day and increased in blood serum on the 10th day after inoculation. Thus, immunogenesis involved simultaneous activation of lymph nodes and adrenal glands.

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SOME NONLINEAR OPTICAL EFFECTS IN POTASSIUM VAPOUR

Arutyunyan, V. M.; Badalyan, N. N.; Iradyan, V. A.; Movsesyan, M. Ye.

Some nonlinear effects (dependence of group velocity on intensity, phase modulation, pulse shape distortion, appearance of combined lines due to multiphoton interaction processes) are investigated theoretically near the $4P_{3/2} - 4S_{1/2}$ resonance of the potassium atom. Broadening of the spectral line of the second Stokes component of chloroform stimulated Raman scattering is observed on passage through a cell containing potassium at a saturated vapour pressure of 0.05—1.7 mm Hg. Under the same experimental conditions three-photon and five-photon scattering was observed.

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Bionics

ARUTYUNYAN, V. S., ABOVYAN, V. G., and OGANESYAN, E. V., Laboratory of
Neurobionics, Academy of Sciences Armenian SSR

"On the Problem of Scanning in Biological Systems"

Abstract: A probabilistic model is developed of the search for an extreme
point located somewhere in a search space, given a certain starting point.
The effectiveness of a random path from the starting point to the extreme
point is given in terms of the angle between this path and a straight line
connecting the two points. After K independent experiments, which produce
K random paths between the two points, a sample is taken of a certain set
of elements of the random event, and then from this set the single element
is selected which is associated with the highest value of a certain index.
Two formulas (for the discrete and continuous cases, respectively) are
developed for determining the probability that a certain element will be
the best one.

This model may be applied to extreme behavioral acts of animals, such as a
dog seeking an odoriferous object located somewhere in a room (he is
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ARUTYUNYAN, V. S., et al., Biologicheskiy Zhurnal Armenii, Vol 24, No 9, 1971, pp 90-93

actually seeking the point in space where the intensity of the smell is maximum). It is believed that the study of such acts may promote the development of optimal scanning algorithms, and the knowledge thus acquired may be applied to industrial problems.

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AUTHOR-(05)-ZALINYAN, M.G., ARUTYUNYAN, V.S., SARKISYAN, O.A., KAZARYAN,
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